REMARKS

Claims 33-62 will be pending in this application after the Examiner enters the forgoing amendment.

The Examiner rejected claims 33, 36, 38-46, 51-56, 58-62 under 35 U.S.C. § 102 as allegedly being anticipated by U.S. Patent Application Publication 2002/0098897 of Manwaring; claims 47 and 52 under 35 U.S.C. § 103 as as allegedly being unpatentable over Manwaring in view U.S. Patent 7,098,891 to Pryor; claims 48-50 under § 103 as allegedly being unpatentable over Manwaring in view of U.S. Patent 6,144,366 to Numazaki; and claims 34, 35, and 37 under § 103 as allegedly being unpatentable over Manwaring in view of U.S. Patent 6,191,799 to Purdy.

Applicant has amended the claims. Applicant respectfully submits that the pending claims, as amended, are nonobvious and not suggested in view of the art of record, and otherwise comply with the statutes and regulations.

Support for amended claim 33's recitation of a "light sensing unit including a plurality of pixels arranged along a first dimension, and a plurality of pixels arranged along a dimension perpendicular to the first dimension" may be found, for example, in page 20, lines 18-19 of the Specification translation filed July 5, 2006 disclosing 32 pixel x 32 pixel CMOS image sensor 43.

Manwaring discloses a system for capturing and analyzing golf club information and golf ball information during and after a golfer's swing. The golf club information includes golf club head orientation, golf club head velocity, and golf club spin. The golf club head orientation includes dynamic lie, loft and face angle of the golf club head. The golf club head velocity includes path of the golf club head, attack of the golf club head and downrange information. ...The system includes camera units (26 and 28), and a trigger device (30). Manwaring Abstract.

A trigger device 30 including a receiver 48 and a transmitter 50. The transmitter 50 is preferably mounted on the frame 34 a predetermined distance from the camera

units 26 and 28. A preferred trigger device is a laser device that transmits a laser beam from the transmitter 50 to the receiver 48 and is triggered when broken by a club swung toward the teed golf ball 32.... Other trigger devices such as optical detectors and audible detectors may be used with the present invention. Manwaring paragraph 64.

The triggering of the trigger device 30 by the golf club 33 is used to determine the speed of golf club swing. As the golf club 33 breaks the beam, the triggering device 30 sends a signal with an estimate of the golf club swing speed to the first and second camera units 26 and 28. Manwaring paragraph 73.

FIG. 4 is an image frame 100 of a driver shot of a golf ball. The image frame 100 includes a first plurality of exposures 102, an initial impact golf ball exposure 103 and a second plurality of exposures 104. The first plurality of exposures includes images of the golf club 33 prior to striking the teed golf ball 32. The second plurality of exposures 104 includes images of the golf ball 56 subsequent to being struck by the golf club 33. The first plurality of exposures 102 may be distinguished from the second plurality of exposures 104 by three different factors.... Manwaring paragraph 65.

FIG. 5 is a first exposure 102a only illustrating the three reflective points on the golf club 33. Manwaring paragraph 66.

As shown in FIG. 6, a second exposure 102b of the first plurality of exposures 102 is added to the first exposure 102a of the first plurality of exposures 102. Manwaring paragraph 67.

As shown in FIG. 7, a third exposure 102c of the first plurality of exposures 102 is added to the first exposure 102a and second exposure 102b of the first plurality of exposures 102. Manwaring paragraph 68.

The Examiner stated that "Pryor discloses an information processing apparatus, analogous in art with that of Manwaring, such that an image display processing unit is operable to update a background image at a time determined by the first trigger." (Office Action page 16).

The Examiner stated that "Numazaki discloses an apparatus for generating information from an input using reflected light image of a target object, analogous in art with that of Manwaring, wherein an image display processing unit is operable to display

a cursor on the display device and move the cursor in accordance with the positional information of the reflecting surface". (Office Action pages 17-18).

The Examiner stated that "Purdy discloses a method for altering the appearance of an animated object, analogous in art with that of Manwaring, such that the first object representing the movement locus comprises a beltlike object (Purdy, Fig. 3B; col. 4, ll. 56-col. 5, ll. 15), said image display processing unit represents the movement locus of the operation article by displaying the beltlike object on the display device so that a width of the beltlike object varies for each prescribed unit which includes a frame, and the width of the beltlike object increases as the frame is updated, and thereafter decreases as the frame is updated". (Office Action page 19).

In contrast, each of claims 33, 34, 36-40, and 54, as amended, recites, inter alia, a light sensing unit operable to receive light reflected from the operation article to generate a first signal, light sensing unit including a plurality of pixels arranged along a first dimension, and a plurality of pixels arranged along a dimension perpendicular to the first dimension; a state information computing unit operable to compute state information on the basis of the first signal and generate a first trigger on the basis of the state information; and an image display processing unit operable to display the recited first object at a time determined by the first trigger. No reasonable combination of the art of record, including Manwaring, would have suggested claim 33's combination, including displaying the first object at a time determined by the recited first trigger generated on the basis of state information, computed on the basis of the recited first signal, generated by the recited light sensing unit including the recited configuration of pixels. (Base claim 33).

Manwaring discloses a trigger device that is a laser device that transmits a laser beam from the transmitter 50 to the receiver 48 and is triggered when broken by a club swing,[1] but there is would have been no suggestion of why, or how, Manwaring could have been modified to achieve the combination of claim 33. The references Pryor, Numakaki, and Purdy do not make up for the deficiencies of Manwaring in this regard.

Manwaring also discloses a partial image frame from only the second camera of a golfer's swing illustrating first, second and third exposures of the highly reflective

1. Manwaring paragraph 64.

points on a golf club, and the teed golf ball before determination of the threshold level on the grey scale. Manwaring paragraph 45. (emphasis added).

FIG. 18 is a partial image frame from only the first camera of a golfer's swing illustrating first, second and third exposures of the highly reflective points on a golf club, and the teed golf ball after determination of the threshold level on the grey scale. Manwaring paragraph 46. (emphasis added).

FIG. 19 is a partial image frame from only the second camera of a golfer's swing illustrating first, second and third exposures of the highly reflective points on a golf club, and the teed golf ball after determination of the threshold level on the grey scale. Manwaring paragraph 47. (emphasis added).

The size of the highly reflective points 106, separation of the highly reflective points 106, and threshold setting are inputted into the computer 22 by the operator. Next, as shown in FIGS. 16 and 17, a bounding area 120 is set about the teed golf ball 32 before the determining the threshold level on a grey scale of 0 to 255 which is a measurement of the light intensity. ...Manwaring paragraph 97. (emphasis added).

Claim 36, as amended, is patentable for the reasons given above, and further because it recites that the state information computing unit computes positional information as the state information of the reflecting surface responsive to speed information as the state information of the reflecting surface exceeding a predetermined first threshold value until the speed information becomes less than a predetermined second threshold value, or computes the positional information of the reflecting surface after the speed information of the reflecting surface exceeds the predetermined first threshold value but before the reflecting surface deviates beyond a photographing range of light sensing unit. No reasonable combination of the art of record, including Manwaring, would have suggested claim 36's combination, including the recited speed information interrelated with the recited thresholds.

Each of claims 41, 42, and 61 as amended is patentable as it recites, inter alia, a light sensing unit operable to receive light reflected from the operation article to generate a first signal, light sensing unit including a plurality of pixels arranged along a first dimension, and a plurality of pixels arranged along a dimension perpendicular to

the first dimension; and a light sensing unit operable to display the image at a time determined by the recited first trigger. (Base claim 41)

Each of claims 43 and 55, as amended is patentable as it recites, inter alia, a light sensing unit operable to receive light reflected from the operation article to generate a first signal, light sensing unit including a plurality of pixels arranged along a first dimension, and a plurality of pixels arranged along a dimension perpendicular to the first dimension; and; an image display processing unit operable to display the image at a time determined by the first trigger. (Base claim 43).

Each of claims 44 and 45, as amended is patentable as it recites, inter alia, a light sensing unit operable to receive light reflected from the operation article to generate a first signal, light sensing unit including a plurality of pixels arranged along a first dimension, and a plurality of pixels arranged along a dimension perpendicular to the first dimension; and an image display processing unit operable to display a predetermined object on the display device in response to the trigger, the image display processing unit operable to display the predetermined object at a time determined by the recited trigger. (Base claim 44).

Each of claims 46 and 56, as amended is patentable as it recites, inter alia, a light sensing unit operable to receive light reflected from the operation article to generate a first signal, light sensing unit including a plurality of pixels arranged along a first dimension, and a plurality of pixels arranged along a dimension perpendicular to the first dimension; and a state information computing unit operable to compute state information of the operation article on the basis of the first signal generated by light sensing unit and generate a first trigger on the basis of the state information; and
an image display processing unit that displays a character string differing from the character string on the display device at a time determined by the recited first trigger. (Base claim 46).

Each of claims 47 and 57, as amended is patentable as it recites, inter alia, a light sensing unit operable to receive light reflected from the operation article to generate a first signal, light sensing unit including a plurality of pixels arranged along a first dimension, and a plurality of pixels arranged along a dimension perpendicular to

the first dimension; an image display processing unit operable to update a background image at a time determined by the recited first trigger. (Base claim 47)

Each of claims 48-50, as amended is patentable as it recites, inter alia, a light sensing unit operable to receive light reflected from the operation article to generate a first signal, light sensing unit including a plurality of pixels arranged along a first dimension, and a plurality of pixels arranged along a dimension perpendicular to the first dimension; a positional information computing unit operable to compute positional information of the reflecting surface on the basis of the first signal; and an image display processing unit operable to display a cursor on the display device and move the cursor in accordance with the positional information of the reflecting surface. (Base claim 48).

Each of claims 51 and 58, as amended is patentable as it recites, inter alia, a light sensing unit operable to receive light reflected from the operation article to generate a first signal, light sensing unit including a plurality of pixels arranged along a first dimension, and a plurality of pixels arranged along a dimension perpendicular to the first dimension; and a process fixing unit operable to fix execution of a predetermined process on the basis of the state information of the reflecting surface at a time determined by the recited first trigger. (Base claim 51).

Each of claims 52 and 59, as amended is patentable as it recites, inter alia, a light sensing unit operable to receive light reflected from the operation article to generate a first signal, light sensing unit including a plurality of pixels arranged along a first dimension, and a plurality of pixels arranged along a dimension perpendicular to the first dimension; a state information computing unit operable to compute state information of the operation article on the basis of the first signal, and an image display processing unit operable to display a predetermined object on the display device responsive to the state information that is obtained successively meeting a predetermined condition. (Base claim 52).

Each of claims 53 and 60, as amended is patentable as it recites, inter alia, a light sensing unit operable to receive light reflected from the operation article to generate a first signal, light sensing unit including a plurality of pixels arranged along a first dimension, and a plurality of pixels arranged along a dimension perpendicular to the first

dimension; and an image display processing unit operable to display on the display device a guide which instructs an operation direction and operation timing of the operation article and display an image on the display device in accordance with the state information, at a time determined by the recited first trigger. (Base claim 53).

If the Examiner has any questions about this amendment, Applicant's representative would appreciate discussing this amendment with the Examiner. Applicant's representative, Jerome Jackson, can be reached at 703-684-4840.

Respectfully submitted,

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